Upgrading to Novell NetWare 6.5 on ProLiant servers

integration note

Abstract

This integration note provides requirements and guidelines for upgrading from Novell NetWare 5.1 and 6 to Novell NetWare 6.5 on ProLiant servers. More specifically, we discuss the following four topics:

- Enhancements of Novell NetWare 6.5
- Comprehensive upgrade plan
- Upgrading to Novell NetWare 6.5
- Post upgrade tasks

This integration note specifically covers an in-place upgrade from NetWare 5.1 or 6 to NetWare 6.5.

Note
HP highly recommends that you read this integration note before proceeding with the upgrade process.

Introduction to Novell NetWare 6.5

Novell NetWare 6.5, the latest release of the NetWare 32-bit operating system, is built on the Novell NetWare 6 code base. NetWare 6.5 focuses on the end user by providing OneNet access from anywhere and any device. Applications currently supported on NetWare 6 are also supported on NetWare 6.5.

Enhancements

- NetWare 6.5 provides increased stability for its Virtual Machine subsystem and greater than 4 GB Memory (Extended Server Memory) support, such that memory above 4 GB can be used by the file system (NSS) for swap-space and data caching.
- NetWare 6.5 provides improved Legacy-Free support, including USB Floppy Drive, USB CDROM (except during installation), and USB Specification version 2.0 support (USB Keyboard/Mouse already supported).
- NetWare 6.5 provides additional ACPI support including thermal, device and power management.
- NetWare 6.5 provides enhancements to NSS (Novell Storage Systems) that provide:
  - MPIO (Multi-Path Input/Output) Support
  - NFS Locking Interfaces
  - Volume-level Snapshots
  - Pool-level Snapshots (Allows for pool quiesce for block-level copies)
  - Volume Split/Volume Move
  - CIFS Junctions (Volume junctioning support for CIFS protocols and CIFS-based clients)
- NetWare 6.5 provides enhancements for system backup:
  - Pool-Level Snapshots
  - Cluster Failover API's
  - Throughput Increase (800 MB/sec to local tape device, 600 MB/sec remote)
  - eDirectory Hot Backups
  - HSM (Hierarchical Storage Management) Support (Allows near-line or off-line data migration)
  - Serverless Backup APIs (All data, metadata and controller data reside on the SAN, removing the LAN and/or WAN as the transmission media

Comprehensive upgrade plan

When considering upgrading your server to a more powerful operating system, it is important to evaluate your existing hardware components. This evaluation is a necessity when upgrading to NetWare 6.5 due to applications such as eDirectory, iFolder, iPrint, and Apache Web Server, which require increased amounts of RAM and storage to run at peak performance.

To ensure a smooth upgrade, prepare a comprehensive upgrade plan. Preparation avoids confusion and frustration, insufficient hardware or hardware conflicts, data loss, and installation delays.

At a minimum, an upgrade plan should include these tasks:

- Check minimum hardware requirements and gather appropriate software, licenses, and support documentation.
- Check for the latest drivers, utilities, support packs, and OS patch list.
- Back up the current system.
- Prepare the network and server.
- Upgrade to NetWare 6.5.

Check minimum hardware requirements

HP and Novell work closely to develop compatible software and hardware products that are thoroughly tested on ProLiant servers and StorageWorks products. For a complete listing of Novell certified ProLiant servers as well as checking compatibility requirements for your adapters, controllers, drive arrays, and other devices that support NetWare 6.5, see the Novell website at http://developer.novell.com/yessearch/Search.jsp, then type **HP** in the Advanced Keyword Search box, and click **Search**.

Table 1 lists the minimum hardware requirements for NetWare 6.5.

Table 1. Minimum hardware requirements

Parameter	Value
Processor	550 MHz Pentium III or greater
RAM	512 MB (OS only); 1 GB (OS and all applications)
Monitor	VGA or higher resolution
Available disk space	1 GB DOS partition; 4 GB for OS and applications

Note: HP has seen installation issues occur with some server ROM versions. Prior to the upgrade, ensure that the latest server ROM has been installed on the server. To download the latest server ROMs, visit http://h18023.www1.hp.com/support/files/server/us/romtabl.html. Additionally, apply firmware updates to all devices in the server such as controllers and disk drives. Driver updates for all HP products can be found at http://h18023.www1.hp.com/support/files/server/us/.

Server platforms

Table 2 lists the ProLiant servers that currently support NetWare 6.5. For the latest information, refer to the ProLiant Supported OS Matrix available at ftp://ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf.

Table 2. Supported system platforms

CL servers	DL servers	ML servers
ProLiant CL380	ProLiant DL360 (all generations and speeds)	ProLiant ML310
	ProLiant DL380 (all generations and speeds)	ProLiant ML330 (1.13 GHz and greater)
	ProLiant DL380 Packaged Cluster (all generations and speeds)	ProLiant ML350 (all generations and speeds)
	ProLiant DL560	ProLiant ML370 (all generations and speeds)
	ProLiant DL580 (all generations and speeds)	ProLiant ML530 (all generations and speeds)
	ProLiant DL760 (G1 only)	ProLiant ML570 (all generations and speeds)
		ProLiant ML750

Supported storage options

Table 3 lists supported ProLiant tape options that support NetWare 6.5. Visit the backup vendor's website to determine support availability.

Table 3. Supported ProLiant tape storage options

Option	Driver	Location
Compaq 4/8-GB SLR Tape Drive	Vendor Specific	NetWare 6.5 Operating System CD
Compaq 4x-32x CD-ROM Drives	Vendor Specific	NetWare 6.5 Operating System CD
Compaq AIT Tape Drives	Vendor Specific	NetWare 6.5 Operating System CD
Compaq DAT Tape Drives	Vendor Specific	NetWare 6.5 Operating System CD
LTO 215/230 Ultrium-1 Tape Drives	Vendor Specific	NetWare 6.5 Operating System CD
Compaq 4/8 GB Autoloader	Vendor Specific	NetWare 6.5 Operating System CD
Compaq DDS2 4/16 GB Autoloader	Vendor Specific	NetWare 6.5 Operating System CD
Compaq DDS3 12/24 GB DAT Autoloader	Vendor Specific	NetWare 6.5 Operating System CD
Compaq DDS4 20/40 GB DAT Autoloader	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks 35GB AIT Autoloader	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks 8/16 Cartridge DLT Autoloader	Vendor Specific	NetWare 6.5 Operating System CD
Compaq DLT 15 Cartridge Library Model 15/30	Vendor Specific	NetWare 6.5 Operating System CD
Compaq DLT 15 Cartridge Library Model 20/40	Vendor Specific	NetWare 6.5 Operating System CD
Compaq DLT 15 Cartridge Library Model 35/70	Vendor Specific	NetWare 6.5 Operating System CD
Compaq DLT Tape Drives	Vendor Specific	NetWare 6.5 Operating System CD

Option	Driver	Location
StorageWorks ESL9326 Family DLT/SDLT Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks ESL9322L1 LTO-1 Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks ESL9322S2 SDLT Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks ESL9595L1 LTO-1 Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks ESL9595S2 SDLT Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks ESL9595SL SDLT Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks MSL5026DLX DLT Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks MSL5026SL SDLT Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks MSL5026S2 SDLT Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks MSL5030L1 LTO-1 Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks MSL5052S2 SDLT Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks MSL5052SL SDLT Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks MSL5060L1 SDLT LTO-1 Tape Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks SSL2020 AIT Mini-Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks TL881 DLT Mini-Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks TL891 DLT Mini-Library	Vendor Specific	NetWare 6.5 Operating System CD
StorageWorks TL895 DLT Library	Vendor Specific	NetWare 6.5 Operating System CD

Table 4 lists supported ProLiant storage devices and controllers and drivers supported by NetWare 6.5.

Table 4. Supported ProLiant storage devices[1]

Option	Driver	Location
Compaq 4.3 – 145.6 GB Hard Disk Drives	CPQSHD.CDM	NetWare 6.5 Operating System CD
Compaq 64-Bit Dual Channel Wide-Ultra2 SCSI Controller	CPQSCSI.HAM	NetWare 6.5 Operating System CD
Smart Array 53xx Controller[2]	CPQRAID.HAM	NetWare 6.5 Operating System CD
Smart Array 5312 Controller[2]	CPQRAID.HAM	NetWare 6.5 Operating System CD
Smart Array 532 Controller[2]	CPQRAID.HAM	NetWare 6.5 Operating System CD
Smart Array 5i and 5i Plus Controllers[2]	CPQRAID.HAM	NetWare 6.5 Operating System CD
Smart Array 6400[2]	CPQRAID.HAM	ProLiant Support Pack 6.41
Smart Array 641 Controller[2]	CPQRAID.HAM	NetWare 6.5 Operating System CD
Smart Array 642 Controller[2]	CPQRAID.HAM	NetWare 6.5 Operating System CD
StorageWorks MSA Fabric Switch	QL2300.HAM	NetWare 6.5 Operating System CD
Fibre Channel Host Controller /P (64-bit/66-MHz Fibre Channel Host Adapter)	CPQFC.NLM	NetWare 6.5 Operating System CD
hp StorageWorks FCA2210 Fibre Channel HBA for NetWare[2]	QL2300.HAM	NetWare 6.5 Operating System CD
hp StorageWorks Modular SAN Array 1000	QL2300.HAM	NetWare 6.5 Operating System CD
hp StorageWorks Modular Array ma8000	CPQFC.HAM	NetWare 6.5 Operating System CD
hp StorageWorks Enterprise Modular Array ema12000/ema16000	CPQFC.HAM	NetWare 6.5 Operating System CD
hp StorageWorks Enterprise Virtual Array 3000/5000	QL2300.HAM	NetWare 6.5 Operating System CD
Smart Array 221, Smart Array 3200, Smart Array 431, 4200, Smart Array 4250ES, and Integrated Smart Array Controllers[2]	CPQARRAY.NLM	NetWare 6.5 Operating System CD
hp 64-Bit/133-MHz Dual Channel Ultra320 Adapter	LSIMPTNW.HAM	ProLiant Support Pack 6.41
64-bit/66MHz Single Channel Wide Ultra 3 SCSI Adapter	ADPT160M.NLM	NetWare 6.5 Operating System CD
64-bit/66MHz Dual Channel Wide Ultra 3 SCSI Adapter	ADPT160M.NLM	NetWare 6.5 Operating System CD

[1] Adapter support differs between server models. Please check the QuickSpecs for the server to determine adapter support.
[2] For all Smart Array controllers and Fibre Channel HBAs, the CPQSHD.CDM driver is used as well as the listed storage driver. This driver works in concert with the base storage driver.

Supported network interface controllers

Table 5 lists supported ProLiant network interface controllers (NICs) and drivers supported by NetWare 6.5.

Table 5. Supported ProLiant NICs[3]

NIC	Driver	Location
NC3120 Fast Ethernet	N100.LAN	NetWare 6.5 Operating System CD
NC3121 Fast Ethernet	N100.LAN	NetWare 6.5 Operating System CD
NC3122 Fast Ethernet	N100.LAN	NetWare 6.5Operating System CD
NC3123 Fast Ethernet	N100.LAN	NetWare 6.5 Operating System CD
NC3131 Fast Ethernet	N100.LAN	NetWare 6.5 Operating System CD
NC3132 Fast Ethernet Upgrade Module	N100.LAN	NetWare 6.5 Operating System CD
NC3133 Fast Ethernet Upgrade Module	N100.LAN	NetWare 6.5 Operating System CD
NC3134 Fast Ethernet	N100.LAN	NetWare 6.5 Operating System CD
NC3135 Fast Ethernet Upgrade Module	N100.LAN	NetWare 6.5 Operating System CD
NC3162 Fast Ethernet (Embedded)	N100.LAN	NetWare 6.5 Operating System CD
NC3163 Fast Ethernet (Embedded)	N100.LAN	NetWare 6.5 Operating System CD
NC6132 Gigabit Module	N1000.LAN	NetWare 6.5 Operating System CD
NC6133 Gigabit Module	N1000.LAN	NetWare 6.5 Operating System CD
NC6134 Gigabit	N1000.LAN	NetWare 6.5 Operating System CD
NC6136 Gigabit	N1000.LAN	NetWare 6.5 Operating System CD
NC7131 Gigabit	N1000.LAN	NetWare 6.5 Operating System CD
NC7132 Gigabit Module	N1000.LAN	NetWare 6.5 Operating System CD
NC6770 Gigabit Server Adapter	Q57.LAN	NetWare 6.5 Operating System CD
NC7760 PCI-X Gigabit Server LAN on the Motherboard (LOM)	Q57.LAN	NetWare 6.5 Operating System CD
NC7770 Gigabit	Q57.LAN	NetWare 6.5 Operating System CD
NC7780 PCI Gigabit Server LOM	Q57.LAN	NetWare 6.5 Operating System CD

[3] Adapter support differs between server models. Please check the QuickSpecs for the server to determine adapter support.

ProLiant cluster support

The following platforms support NetWare 6.5 clustering:

- ProLiant CL380 Packaged Cluster
- ProLiant DL380 G2 Packaged Cluster
- ProLiant DL380 G3 Packaged Cluster
- ProLiant DL360
- ProLiant DL360 G2
- ProLiant DL360 G3
- ProLiant DL380
- ProLiant DL380 G2
- ProLiant DL380 G3
- ProLiant DL560
- ProLiant DL580
- ProLiant DL580 G2
- ProLiant ML370 G2
- ProLiant ML530
- ProLiant ML530 G2
- ProLiant ML570
- ProLiant ML570 G2

PCI Hot Plug support

HP and Novell jointly invented and introduced PCI Hot Plug technology. HP supports PCI Hot Plug with NetWare 6.5 on the following servers:

- ProLiant DL380 G2
- ProLiant DL380 G3
- ProLiant DL580
- ProLiant DL580 G2
- ProLiant DL760
- ProLiant ML370 G2
- ProLiant ML530 G2
- ProLiant ML570
- ProLiant ML570 G2
- ProLiant ML750

Gather appropriate software and support documentation

Table 6 lists supported ProLiant utilities, drivers, and other value-add software and their corresponding version needed for NetWare 6.5.

These utilities and drivers are included in the ProLiant Support Pack (PSP) for Novell NetWare 6.41, which can be downloaded from http://h18007.www1.hp.com/support/files/server/us/index.html.

From this link, use option2: locate by category, and select **Novell NetWare 6.5** from the drop-down list box.

Table 6. Supported ProLiant value-add software

Utility	Module name	Minimum version
Server Health Driver	CPQHLTH.NLM CPQASM.NLM	5.08
Server Agents	CPQBSSA.NLM CPQHTHSA.NLM CPQRISA.NLM CPQSERV.RDM	6.41
Foundation Agents	CPQAGIN.NLM CPQHOST.NLM CPQHMMO.NLM CPQTHRSA.NLM CPQWEBAG.NLM CPQHLTAG.CFG CPQSNMP.CFG CPQFOUND.RDM	6.41
NIC Agents	CPQNCSA.NLM CPQNIC.RDM	6.41
Storage Agents	CPQSSSA.NLM CPQDASA.NLM CPQIDESA.NLM CPQSCSA.NLM CPQFCASA.NLM CPQSTOR.RDM	6.41
Integrated Management Log Viewer	CPQIML.NLM	1.23c
Survey Utility	SURVEY.NLM SINSTALL.NLM SURVEYCW.NLM SURVEY.INI	2.55
Online Array Configuration Utility[4]	CPQONLIN.NLM	2.70
System Bus Driver[5]	CPQSBD.NLM CPQSBD.HDI	3.18
iLO Management Interface Driver	CPQCI.NLM	1.02d
RILOE Management Interface Driver	CPQRI.NLM	3.12f
hp ProLiant CSB-6 ATA-100 IDE RAID Management Utility for NetWare	SPY.NLM	7.24

[4] This utility supports devices that use CPQARRAY.HAM or CPQFC.HAM as the driver. It also supports the Smart Array 5i, 532, and 53xx series controllers that use CPQRAID.NLM as the driver. It does not support the Smart Array 64x or 64xx series controllers. Refer to Table 6 for a list of supported devices.

[5] This driver also ships on the NetWare 6.5 base media.

Utility	Module name	Minimum version
NIC Teaming Driver for N100.LAN and N1000.LAN Drivers	CPQANS.LAN CPQANS.LDI	7.03
NIC Teaming Drivers for Q57.LAN Driver	QASP.LAN QASP.LDI BMAPI.NLM	2.19

All other HP specific drivers needed to install and run NetWare 6.5 are included on the NetWare 6.5 base media, as well as on the NetWare 6.5 PSP mentioned previously.

Check for the latest Novell Support Pack and OS patch list

Upgrades to NetWare 6.5 are only supported from the following NetWare versions:

- NetWare 6 with Support Pack 3 (or later)
- NetWare 5.1 with Support Pack 6 (or later)

Upgrades to servers running NetWare 3.x, 4.x, or 5.0 can only be performed if the server is first upgraded to NetWare 5.1 with Support Pack 6 (or later) or NetWare 6 with Support Pack 3 (or later).

Note
A comprehensive server health check is performed prior to starting the upgrade process. If the server does not meet the above requirements, the upgrade will terminate.

Server management using iLO or RILOE II

Remote management of NetWare 6.5 can be performed on any supported server with Integrated Lights-Out (iLO) or an installed Remote Insight Lights-Out Edition II (RILOE II) card.

Detailed information on configuration and operation of each product can be found in the product user guides available at the following locations:

- For iLO: http://h18013.www1.hp.com/products/servers/management/ilo/documentation.html
- For RILOE II: http://h18013.www1.hp.com/products/servers/management/riloe2/documentation.html

Backup the current system

There is always a chance that data can be lost or corrupted during an upgrade, so perform a full backup of all files and directories on the NetWare server using a NetWare NDS-aware application. Backups may be stored on any of the following:

- Removable media (for example, cartridge tape)
- A file that can be transferred over the network
- Another system on the network

Some third-party backup applications have the ability to compare the contents of the tape backup to the disk backup. It is a good idea to do a full restore of the backup to verify the backup is reliable. After the data is backed up, record current hardware and firmware configuration settings from the

.NCF files onto a blank diskette. These settings may be required if a restore is necessary. When porting software applications to the new system, contact the appropriate vendor for instructions.

Upgrade procedures

There are two options available for upgrading Novell servers. NetWare 6.5 may be installed through a Standard In-Place Upgrade or through a Remote Upgrade. This integration note only covers the steps to perform an In-Place Upgrade. Complete procedures for both upgrade types can be found on Novell's online documentation website at www.novell.com/documentation/lg/nw65/.

Prepare the network using NetWare Deployment Manager

If this is the first server in the tree to be upgraded to NetWare 6.5, proceed to the next step. Otherwise, skip to step 5 below.

1. On a Windows NT/2000 or Windows XP Professional Workstation running the latest Novell Client, login to the target tree as a user with full Administration rights.

Note
The NetWare 6.5 Deployment Manager can only be run in an Internet Explorer 5 or 6 browser.

2. Insert the NetWare 6.5 Operating System CD into the workstation CD-ROM drive and run the NetWare Deployment Manager (nwdeploy.exe) located at the root of the CD.
3. In the left pane of the browser window, select Preparing the Network. This selection performs the following operations:
   - Verifies that the existing version of NDS (eDirectory) is at minimum levels, and upgrades the tree, if necessary.
   - Extends the schema to support NetWare 6.5 objects.
   - Creates GUIDs for NetWare 4.11 and 4.12 servers in the tree.

Note
NetWare 4.10 servers cannot coexist in the same tree with NetWare 6.5 servers. If NetWare 4.10 servers are in the target tree, they must be removed before the upgrade can proceed.

   - Runs a comprehensive health check on the server to be upgraded to verify that it meets minimum requirements. When the health check completes, review the log file for any warning messages that may be present. Warnings will not prevent the upgrade from proceeding but are noted so that you are aware of items that may be below the recommended guidelines. If any items are marked as "Failed," the upgrade cannot proceed. The following items must pass or the upgrade cannot proceed:
     - 550 MHz Pentium III or faster processor
     - 512 MB of RAM
     - Vol SYS size of 2000 MB with 400 MB free (3800 MB with 1500 MB free recommended)
     - DOS Partition size of 100 MB with 30 MB free (200 MB with 50 MB recommended)

- Runs a cluster health check (on clustered servers only).
- Provides steps to verify that the host CA object is running Novell Certificate Server version 2.0 or later.
- Provides preparation steps for implementing Novell's Universal Password.
- Provides preparation steps for enabling CIFS (Microsoft Windows native network workstations) and AFP (Apple Macintosh native network workstation) users to log into the network.

4. After the target system has passed the health check, exit Deployment Manager on the workstation and remove the CD from the CD-ROM drive.
5. Insert the NetWare 6.5 Operating System CD into the target server's CD-ROM drive, and wait for the CD volume to automount. If the CD volume does not automount, type `load cdrom` at the target server console.
6. Switch to the server GUI screen, select **Novell**, and then select **Install** from the menu.
7. When the Installed Products page appears, select **Add**.
8. When the Source Path page appears, browse to the root of the OS CD, select the Product.ni file, and select **OK**.
9. Verify that the correct path is entered to the Product.ni file in the Source Path page, and select **OK**.
10. When the NetWare 6.5 and JReport runtime license agreements appear, accept each agreement by selecting **I Accept** on each page.
11. The server health check will be performed on the target server to determine if it meets minimum requirements. When the health check completes, review the log file for any warning messages that may be present. Warnings will not prevent the upgrade from proceeding but are noted so that you are aware of items that may be below the recommended guidelines. If any items are marked as "Failed," the upgrade cannot proceed. The following items must pass or the upgrade cannot proceed:
    - 550 MHz Pentium III or faster processor
    - 512 MB of RAM
    - Vol SYS size of 2000 MB with 400 MB free (3800 MB with 1500 MB free recommended)
    - DOS Partition size of 100 MB with 30 MB free (200 MB with 50 MB recommended)
12. Determine if a backup of the old server boot files is desired. If so, specify the backup location in the provided box. HP recommends you accept the default option of Yes, and the default backup file location.
13. Determine if you want the server to reboot automatically after the installation completes. HP recommends you accept the default option of Yes.
14. Determine if you want to allow unsupported drivers to be installed. HP recommends you accept the default option of No, as HP does not provide support for unsupported driver installations.
15. Select either a Default or Manual upgrade by clicking the radio button next to the desired choice.
    - The Default upgrade automatically detects drivers and upgrades the server to NetWare 6.5 with default settings.
    - The Manual upgrade lets you manually configure your drivers and the default settings used in the Default upgrade.

Note
HP recommends selecting **Manual**, as there is a driver that may need to be changed during the upgrade.

16. Select **Next** to begin the file copy.
17. After the file copy completes, the Components page displays, allowing you to choose any additional NetWare 6.5 products for installation. To see a description of a product, place the cursor over the product name.

Note
Because you are performing an upgrade, several components are already selected. These are the components currently installed on the server. Leaving the installed components checked reinstalls the products. Unchecking an installed component does not uninstall the product.

18. Select **Next**, and review the Summary screen of products to be installed for accuracy. If you are satisfied with the products listed, select **Copy Files**. Otherwise, select **Back** and make any necessary changes.
19. The upgrade process copies files for a few minutes. When the file copy completes, the system reboots. Do not remove the Product CD from the CD-ROM drive at this time.

Note
During this file copy, you will be prompted to insert the NetWare 6.5 Product CD. After inserting the CD and selecting **OK**, should a message appear indicating the required files were not found, clear the message box and select **OK** again. This message is caused by inadequate time for the CD to mount after it has been inserted.

20. If you selected **Default** in step 16, skip to step 23. Otherwise, proceed with the next step.
21. The device drivers are detected and you are presented with a screen or screens where you can modify these settings.
    - If you do not want to modify the settings:
        a. Select **Continue**.
        b. Press **Enter**.
    - If you want to modify the settings:
        a. Select **Modify**.

Note
For NetWare 6.5, the base functionality in CPQACPI.PSM and CPQMPK.PSM has been incorporated into Novell's ACPIDRV.PSM. You may need to modify the existing loaded PSM in this step so that ACPIDRV.PSM will be loaded. CPQACPI.PSM and CPQMPK.PSM are not supported on NetWare 6.5. Although both PSMs will load and run, unpredictable results may occur.

b. Press **Enter**.

c. Make any desired changes.

d. Select **Continue**.

e. Press **Enter**.

22. The file copy continues, and the GUI portion of the installation process begins.

23. When prompted, login to eDirectory (NDS) as a user with Admin rights. After successfully logging in, eDirectory upgrades to the latest version. Select **Next** when complete.

24. If this is the first NetWare 6.5 server in the tree, insert a license diskette, when prompted. Insert the diskette, browse to the location of the NLF file, and select **OK**.

25. Select **Next** at the license screen. If this is not the first NetWare 6.5 server in the tree, the existing license(s) displays. You have the option to install additional licenses or to accept the existing license and continue.

26. The NMAS (Novell Modular Authentication Service) installation screen appears. Select the desired login methods that you want to use for installing into eDirectory. When you select a login method, a description of the component appears in the Description box. For more information on login methods, see Managing Login and Post-Login Methods and Sequences in the *Novell Modular Authentication Services 2.2 Administration Guide*. The NDS login method is installed by default and is adequate for most installations.

27. Select **Next** to continue.

Note
The NMAS client software must be installed on each client workstation where you want to use the NMAS login methods. The NMAS client software is included on the Novell Clients Software CD (July 2003).

28. At this time, eDirectory is upgraded with Volume information, and the selected NMAS login methods are installed. After these steps complete, the final file copy automatically begins.

29. When prompted, remove the NetWare 6.5 Product CD and license diskette (if present) and select **OK** to reboot the server. When the server successfully reboots, NetWare 6.5 is functional and ready for user login.

Post upgrade tasks

Updating NSS Volumes

If you upgraded from a NetWare 5.1 server with NSS volumes, you must complete the following procedure to update NSS volumes.

Note
For more detailed information, see Upgrading NetWare 5 NSS Volumes in the Novell Storage Services Administration Guide for NetWare 6.5.

1. When prompted at the end of the upgrade, reboot the computer.
2. Make sure that all processes related to the NetWare 6.5 upgrade have completed.
3. At the server console, enter the following command:

   ```
   NSS /ZLSSVOLUMEUPGRADE=ALL
   ```

   The NSS volumes can now be mounted on the NetWare 6.5 server.

Installing or Updating Novell Client Software

If you are running Novell Client software, upgrade your existing workstations at this time. You can also choose to run workstations without additional software using Novell Native File Access Protocols.

For more information, see the Novell Client documentation.

Installing Product Updates

For best performance, download and install the latest updates available at Novell Support and Downloads.

Troubleshooting

This section details the known issues with running Novell NetWare 6.5 on ProLiant servers and provides information about resolving them.

Table 7. Known issues

Issue 1	**Server Insight and Management Agents will abend the server**	
	Description	The Server Insight, Management Agents, and Survey Utility from SmartStart 6.40 or earlier will abend on NetWare 6.5 servers.
	Workaround	For new server installations, download and install PSP 6.41 for NetWare (available in early September 2003) or obtain SmartStart 7.00 or later (when available) to land modules compatible with NetWare 6.5. For upgrades or migrations to NetWare 6.5 from earlier NetWare versions, either delete or comment out all Insight, Management Agent, and Survey lines from AUTOEXEC.NCF or apply PSP 6.41 for NetWare prior to starting the upgrade or migration.
	Solution	See Workaround.

Issue 2	**Accessing the B:\ drive during installation will hang the server**	
	Description	Attempting to access the B:\ drive during the GUI portion of the server installation will cause the server to hang. This problem only occurs during server installation.
	Workaround	The only available workaround is to restart the server installation.
	Solution	This issue may be fixed in a future Novell Support Pack Overlay CD, but it will always be present in the base media.
Issue 3	**Intermittent keyboard hangs and abends on ProLiant ML310 ATA and ProLiant ML330 G2 ATA servers**	
	Description	Intermittent keyboard hangs and abends occur on ProLiant ML310 ATA and ProLiant ML330 G2 ATA servers configured with MEGARIDE.HAM version 6.12 from the NetWare 6.5 base media and the ProLiant Management Agents (version 6.41 and earlier).
	Workaround	Comment out CPQSNMP.NCF from the Autoexec.ncf file, and reboot the server to unload the agents.
	Solution	Update MEGARIDE.HAM to version 2.11, the supported version in PSP 6.41. A "force" of this component is required when downgrading from version 6.12 to 2.11. To accomplish this task, follow either method below: Method 1 1. Load CPQDPLOY. When CPQDPLOY loads, all components are selected. 2. If you have already installed all of the HP components, use **F4** to Unmark them. 3. Use **F5** to Mark only the MEGARIDE component "MegaRIDE HAM DRIVER for NetWare 6.0." 4. Press **F2** to toggle the FORCE option to ON. 5. Use **F10** to install the component. Method 2 1. If you are loading only the individual component interface, use load cp003451.nlm. 2. Use **F2** to toggle the FORCE option to ON. 3. Use **F10** to install the component. Also, verify that you are running PSP 6.41 (or later) agents by running CPQDPLOY or by typing modules cpq*.* to view the installed version.
Issue 4	**Removal of USB floppy drive may abend the server**	
	Description	Removal of USB floppy drive from the server may cause an abend if the file system has not completed all operations. This problem occurs when the USB floppy drive is removed from the server shortly after all activity to the drive appears to have stopped.
	Workaround	Wait at least 5 minutes after the last floppy drive activity before removing the USB floppy drive from the server.
	Solution	Novell is working on a solution for SP1.
Issue 5	**Replacing a storage controller may cause the server to hang on startup**	
	Description	The server may hang if the storage controller for the SYS volume is changed without first updating STARTUP.NCF with the new controller parameters. This issue can also be seen when a drive containing the SYS volume is moved to another server where the same storage controller as the original server is present, but in a different PCI slot.
	Workaround	Prior to downing the server to replace the controller, edit STARTUP.NCF and enter the controller parameters that will be required for the new controller.
	Solution	Novell is planning to fix this issue in SP1.

Issue 6	**Software RAID 5 not supported**	
	Description	HP and Novell have discovered issues where failed drives in software RAID 5 environments may not properly rebuild and data corruption may occur.
	Workaround	Use software RAID 0 or 1, or use hardware RAID 5 as an alternative.
	Solution	Novell is communicating to customers that software RAID 5 will not be supported until the release of SP1 or later. Software RAID 0 and 1 are fully supported with the base media.
Issue 7	**Improper iSCSI configuration can lead to data corruption**	
	Description	Improper configuration of iSCSI Target and Initiator access can cause data corruption.
	Workaround	Novell has detailed documentation on how to properly configure iSCSI Targets and Initiators. The documentation can be viewed at www.novell.com/documentation.
	Solution	Follow the Novell documentation. Novell is also planning to add additional measures in Support Pack 1 (SP1) to help prevent this problem.
Issue 8	**Insight Manager Web Agent may hang the server**	
	Description	Attempting to access the HP Insight Manager Web Agent from the server browser may cause the server to hang. This problem only appears in the server browser and does not occur when accessing the Web Agent from a Windows-based workstation.
	Workaround	Do not attempt to access the Web Agent from the server browser. Use a workstation browser instead.
	Solution	This is a known issue with HP's implementation of the Web Agent module and will not be fixed.
Issue 9	**Unloading ACPIMGR.NLM will cause the server to abend**	
	Description	Unloading the support module ACPIMGR.NLM will cause the server to abend.
	Workaround	Do not unload ACPIMGR.NLM.
	Solution	Novell is planning to fix this issue in SP1.
Issue 10	**Unpredictable behavior with the ATI Rage XL 8 MB video driver**	
	Description	The ATI Rage XL 8 MB video driver may cause unpredictable behavior in the server GUI. Selection of this driver on supported servers may cause problems varying from loss of keyboard and/or mouse functionality to server hangs and abends. This problem is intermittent.
	Workaround	See Solution.
	Solution	Use the default video driver that is automatically selected during installation. Novell has decided to archive this driver, so it will no longer be maintained and it will be removed from the Novell Overlay CDs for SP1 and later. This driver will remain on the base media; however, it should not be used.
Issue 11	**Server may hang with large NSS read-ahead counts**	
	Description	The NSS file system can hang if the SET parameter "NSS Read Ahead" is set to a value greater than 128. The server will appear to be functioning, but no disk activity can be completed due to constrained resources as a result of the parameter setting.
	Workaround	Set the "NSS Read Ahead" parameter to a value of 128 or less.
	Solution	Novell is planning changes for SP1 that will properly comprehend settings greater than 128.

Issue 12	**CD volumes not mounting after installing NetWare Service Pack 6 on NetWare 5.1 English Only installations causes upgrade to NetWare 6.5 to fail**	
	Description	During an SP6 installation on NetWare 5.1 English Only OS installations, answering "NO" when prompted to update the Storage/LAN/PSM/WAN drivers causes CD volumes not to mount. NetWare 5.1 English Only contains an IDEATA.HAM driver dated 1998 (IDECCD.CDM is also outdated). SP6 installs a newer driver to c:\nwserver\drivers which does not get loaded by default since the OS server path detects the 1998 version in c:\nwserver and loads that version. With the 1998 version, the command "Load CDROM" does not Mount the CD volume. The problem is intensified when changing CDs, as required, during an upgrade to NetWare 6.5.
	Workaround	Once the OS has booted/loaded with the 1998 version of the IDEATA.HAM driver, the CD-ROM commands to load/unload CD9660.nss or load/unload CDROM do not necessarily mount or dismount the CD volumes. The command `Load CDINST.NLM` occasionally works to mount the CD volume. However, there is no reliable workaround.
	Solution	Copy the driver files (IDEATA.HAM and IDECD.CDM) from c:\nwserver\drivers to c:\nwserver after SP6 has been installed. When the server is restarted, the new drivers will load. This step should be done before starting an upgrade to NetWare 6.5 if your system is running with the IDEATA.HAM driver dated 1998.
Issue 13	**NetWare 6.5 does not support boot from USB CD-ROM devices**	
	Description	Systems that do not have an IDE or SCSI CD-ROM drive cannot boot the NetWare 6.5 media because Novell does not support USB CD-ROM during boot.
	Workaround	Perform an over-the-wire installation, or use an IDE or SCSI CD-ROM to install NetWare 6.5.
	Solution	Novell plans to release a bootable ISO CD image with SP1 that will support USB CD-ROM devices. Once the bootable image has loaded, the installation can continue with the base NetWare 6.5 media.
Issue 14	**IPX cannot be bound to more than one NIC during installation**	
	Description	During installation, IPX cannot be bound to more than one NIC when also binding IP.
	Workaround	Do not attempt to bind IPX on more than one NIC until after the installation has completed and the server is running.
	Solution	This problem appears to be a resource allocation issue and will be fixed in a future Novell Support Pack Overlay CD. However, this issue will always be present in the base media.
Issue 15	**Problem with N100.LAN loading with some server ROMS**	
	Description	N100.LAN may fail to load on some ProLiant servers with down-level ROM revisions.
	Workaround	See Solution.
	Solution	Download and flash the server ROM to the latest revision. To download the latest server ROMs, visit http://h18023.www1.hp.com/support/files/server/us/romtabl.html.
Issue 16	**Downgrade messages may appear during upgrade from NetWare 5.1 or NetWare 6**	
	Description	Upgrades from NetWare 5.1 (with SP 6 or later applied) or from NetWare 6 (with SP3 or later applied) causes a downgrade message for NCMCON.CFG to appear. NCMCON.CFG on SmartStart 6.40 and PSP 6.41 is a newer version (dated May 2003) than the one located on the NetWare 6.5 base media (dated March 2003). The CFG file contains PCI IDs that identify the cards installed in the server through NCMCON.NLM. Without the PCI IDs, NCMCON displays cards and slots as unknown devices; however, this classification does not affect the hot plug functionality of the card or slot.

	Workaround	Select **Do not downgrade** during the installation, and keep the latest version of NCMCON.CFG.
	Solution	Install PSP 7.00 (from the web or through the SmartStart CD when available) to obtain the latest NCMCON.CFG.
Issue 17	**Virtual CD-ROM in iLO and RILOE II does not work**	
	Description	The Virtual CD-ROM function does not work with NetWare 6.5 due to an issue with the iLO and RILOE II firmware.
	Workaround	The Virtual Floppy function, a similar feature, can be used as an alternative to the Virtual CD-ROM function.
	Solution	This issue will be fixed in a future release of the iLO and RILOE II firmware.
Issue 18	**Virtual Floppy might not work with RILOE II**	
	Description	Virtual Floppy occasionally does not work with RILOE II because the OS does not see the drive.
	Workaround	See Solution.
	Solution	This issue will be fixed in a future release of the RILOE II firmware.
Issue 19	**Across-the-wire installations on ACPI-based systems may fail**	
	Description	Across-the-wire installations on ACPI-based systems (ACPIDRV.PSM) may fail.
	Workaround	Novell has released an updated HIMEMPRO.SYS module that must be present on the boot floppy prior to starting the installation. This is documented in Novell TID #2965742 and can be downloaded from http://support.novell.com/cgi-bin/search/searchtid.cgi?/2965742.htm.
	Solution	See Workaround.
Issue 20	**Display issues may occur with storage data reported through Insight Manager 7 for the ProLiant ML330 G3 server**	
	Description	Storage data reported through Insight Manager 7 for the ProLiant ML330 G3 ATA server may not display correctly with MEGARIDE.HAM version 6.12.
	Workaround	See Solution.
	Solution	Update the driver to LSICSB6.HAM from PSP 6.41 for Management Agent functionality.

Summary

In this integration note, you were given the tools needed to perform a successful upgrade of Novell NetWare 6.5. For additional information, refer to the resources detailed in the "For more information" section.

For more information

The NetWare 6.5 Welcome screen provides helpful information for getting the most out of your new NetWare 6.5 server. To access the Welcome screen, open a browser on a workstation with access to the new NetWare 6.5 server and go to *http://xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the new server's IP address.

For additional information, refer to the resources detailed below.

Table 8. Additional web resources

Resource description	Web address
HP and Novell Partnership site	http://h18000.www1.hp.com/products/servers/software/novell/index.html
HP solutions for Novell NetWare 6.5	http://h18000.www1.hp.com/products/servers/software/novell/netware/description.html
Novell NetWare 6.5 white papers	http://h18004.www1.hp.com/products/servers/technology/whitepapers/novell-os.html

Call to action

To help us better understand and meet your needs for ISS technology information, please evaluate this paper by completing the short survey at www.zoomerang.com/survey.zgi?R61EGV1YCVQGC2F4FWRNY7J4.

Note: This URL will be active through 31 December 2003. Please send questions and further comments about this paper to: OSIntegrationFeedback@HP.com.

TC031002IN, 10/2003

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